

Application No.: 09/889916

Docket No.: HHI-032USRCE

**REMARKS**

Upon entry of this Amendment, claims 1-10 remain pending. Claims 1 and 6 are amended herein. No new matter is involved with the amendment, as support can be found in the specification at least on page 6, lines 17-26. Reconsideration and allowance of all pending claims are requested in view of the remarks below.

**Claim Rejections – Under 35 U.S.C. §112**

Claims 6-9 were rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention. As noted in a brief telephone conversation with the Examiner on November 19, 2003, Applicant traverses this rejection as detailed in Applicant's Response filed July 8, 2003.

**Claim Rejections – Under 35 U.S.C. §103(a)**

Claims 1-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over either German Patent No. 1,508,800 of Blum et al. or International Publication No. WO 91/12910 of Hagens in view of U.S. Patent No. 4,961,461 of Klier et al. Applicant traverses this rejection.

Claims 1 and 6 recite adding fibers, particles or similar additives immediately before the molten light metal enters the gap between two cooling bodies. This can provide a more

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beneficial distribution of the additives and inhibit changes of physical and chemical properties of the additives. If the fibers are added too early to the melt, lighter fibers having a lesser specific weight might tend to rise within the melt, which heavy fibers might tend to sink down within the melt. Such an uneven distribution could prevent a homogenous melt, resulting in non-uniform properties of the resulting cast product.

Klier shows a technically demanding and complex device for mixing the melt permanently. By that permanent mixing, an uneven distribution of the several fractions can be avoided. However, as recited in claims 1 and 6, the present invention does not require such complexity. Furthermore, the high shear rate mixing preferred in Klier, see column 4 beginning at line 7, would likely change the physical properties of any added fibers. Fibers, such as carbon fibers, can be cut in two by the high shear forces. Such modifications to the fibers can detrimentally influence the mechanical properties of the case product, as shorter fibers may result in a weaker cast product. Conversely, as recited in claims 1 and 6, by adding fibers, particles or similar additives immediately before the molten light metal enters the gap between two cooling bodies, the additives are less likely to be damaged.

Applicant submits that the references do not teach feeding molten light metal into a gap between two cooling bodies and adding fibers, particles or similar additives immediately before the molten light metal enters the gap. As noted above, Klier does not teach or suggest such a configuration and, as the Office Action notes, neither of the primary references involves a reinforcement adding step. Therefore, Applicant asserts that the rejection of claims 1 and 6 should be withdrawn. The remaining claims 2-5 and 6-10 are patentable at least by way of their dependency from claim 1 or 6.

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Furthermore, Applicant continues to object to the combination of these references. Applicant asserts that it would not be obvious to modify the '800 patent in view of Klier. To properly combine references, an objective teaching leading to the combination must be shown. *In re Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999). "The showing must be clear and particular.... Broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence.'" *Id.*

Also, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). See also MPEP § 2143.01.

Specifically, the '800 patent involves a device for continuous casting of refractory materials. Because the text of the '800 patent is in German, Applicant references an apparent family member, U.S. Patent No. 3,442,321 to Blum, in the following discussion. Applicant notes that Blum uses an electron gun 1 to melt very high melting temperature material, such as uranium carbide introduced to the electron beam 3. See column 1, lines 62-68. Applicant notes that Blum is directed to obtaining what it describes as "calm fusion". Blum notes that the aim of his invention is to eliminate the problem of evaporation of the material which results in more or less rapid accumulation of a troublesome layer on the walls of a cold crucible by the use of a continuous renewal of the wall of the crucible. See column 1, lines 50-61.

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Blum notes that the structural soundness of the material is improved if the ingot is caused to rotate together with its crucible beneath a stationary electron beam. See column 1, lines 36-47. As summarized in column 2, lines 9-16, the configuration of Blum locates the electron beam such that a melting pot is formed having a sidewall which is renewed progressively as the movement of the pulleys 6, 8 takes place. The wall leaves the melting point before any troublesome deposit has had time to form and it is progressively replaced by a fresh wall.

While Blum is directed to various structures that accommodate the difficulties encountered with very high melting temperature materials by the use of an electron gun, Klier is directed to a substantially different process. Klier is focused on producing "composites as free as possible from porosity". See column 2, lines 31-32. To accomplish this, Klier teaches the use of "highly shearing the matrix material in the concentrated dispersion". See, for example, claim 1. Klier does not involve an electron beam or continuously moving walls in a melting pot. Instead, Klier uses a rotor 103 to pump and blend a partly liquid mixture into a region 104 where it is vigorously agitated and mixed by high shear provided by the narrow gap between wall 105 and the conical rotor 106, producing a well dispersed slurry 107. See column 5, line 50-62.

The Office Action asserts that it would be obvious to combine the teachings of Blum and Klier by simply adding a reinforcement material into the molten metal of Blum if a composite article is designated. As a preliminary matter, Applicant submits that one of ordinary skill in the art would not look to Blum in order to produce light metal pellets having fibrous particles or similar additives, at least because Blum makes no mention of a composite particle. Furthermore, as noted at column 1, lines 62-66, the electron beam is provided to melt the material introduced

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into the electron beam, which does not suggest the use of fibers, particles, or similar additives not formed of the metal being processed.

However, even if one were to look to Blum for the production of light metal pellets having fibrous particles or similar additives, Applicant submits that it would not be obvious to combine Blum with Klier. As noted above, Klier is directed to a substantially different application, specifically, a process that is focused on the production of a slurry to produce a composite as free as possible from porosity. There is no suggestion in Klier to use an electron gun or to use a melting pot having a progressively renewed side wall at the melting point. Applicant submits that the Office Action is insufficient to support a combination of these references, and is improperly using hindsight, with the benefits of Applicant's disclosure, to assert that Applicant's invention is obvious.

The Office Action also asserts that the international publication WO91/12910 to Hugens, would be obvious to modify in view of Klier. Applicant asserts that it would not be obvious to look to Hugens in order to produce light metal pellets having fibers, particles or similar additives, as Hugens makes no mention of such additives. Applicant submits that it would not be obvious to combine Hugens with Klier. As noted above, Klier is directed to the production of a slurry in order to produce composites as free as possible from porosity, whereas Hugens is directed to continuous casting of discrete solid shapes by the use of a modified continuous casting machine. In summary, Applicant submits that no objective teaching in the cited art would lead one of ordinary skill in the art to use Hugens, or combine Hugens with Klier, for the production of light metal pellets having fibers, particles or similar additives.

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In view of the above remarks, Applicant submits that claims 1 and 6 are patentable over a combination of Blum and Klier and a combination of Hugen and Klier. The remaining claims 2-5 and 7-10 are patentable at least by way of their dependency from claim 1 or 6.

**Conclusion**

In view of the remarks set forth above, it is respectfully submitted that this application is in condition for allowance. Accordingly, allowance is requested. If there are any remaining issues or the Examiner believes that a telephone conversation with the Applicants' attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at (617) 227-7400.

Respectfully submitted,  
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